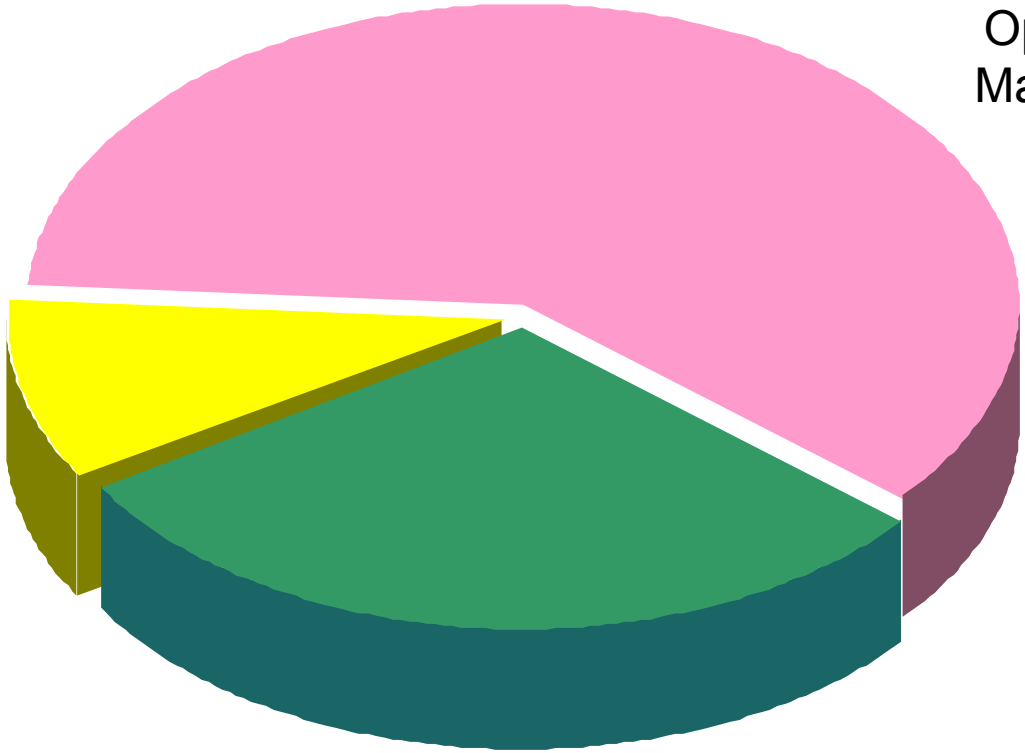
Operation & Maintenance Support Information (OMSI)

FAN Workshop

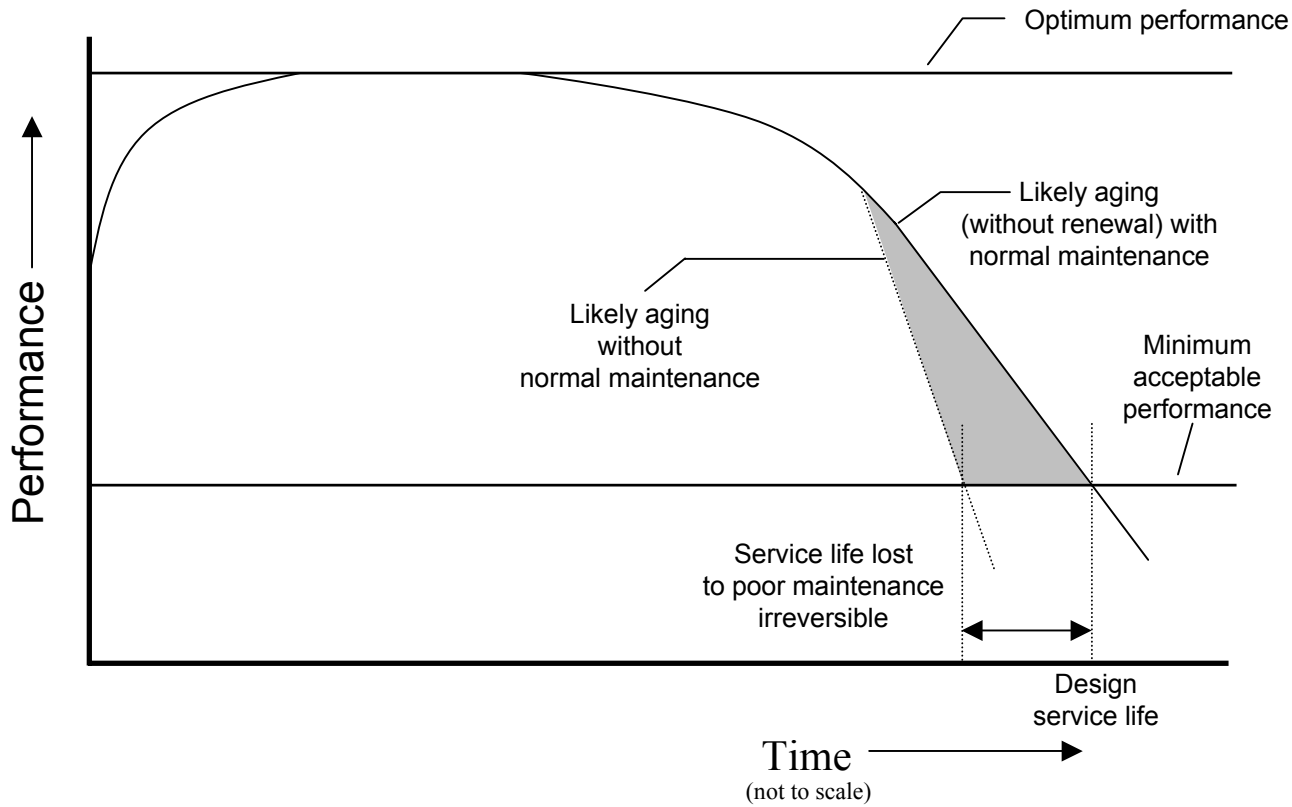
26 February 2004

Life Cycle Cost



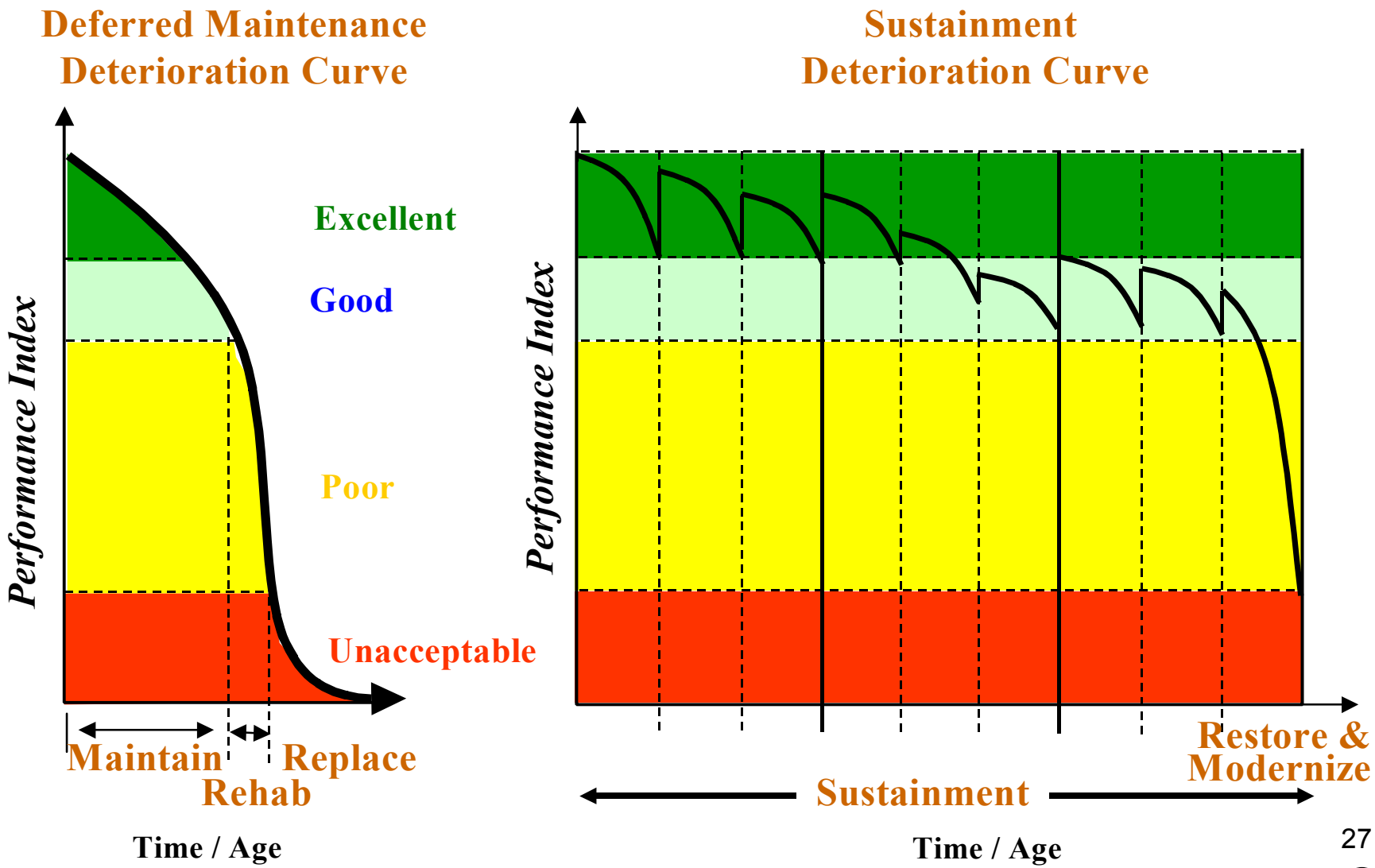
(Source Stewardship of Federal Facilities, 1998)

Life Cycle of Buildings



Effect of adequate and timely maintenance and repairs on the service life of a building. (Source Stewardship of Federal Facilities, 1998)

Service Life and Performance

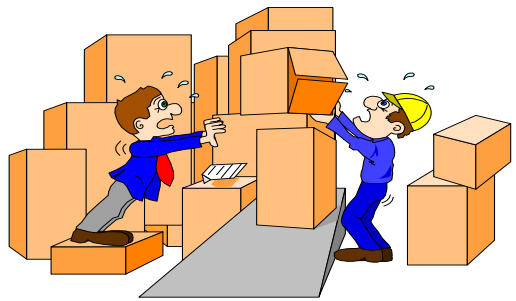


From CDR Branch's "SRM and Navy Facility Investment" brief to Ms. Anne Davis, ASN(IA)on 3/01/02

Past Practices

- O&M submittals in unusable format - boxes, piles
- Data quickly lost
- Poor or no PM
- Repairs difficult and costly
- Warranties not maintained or lost
- Mission impact

- Result?….



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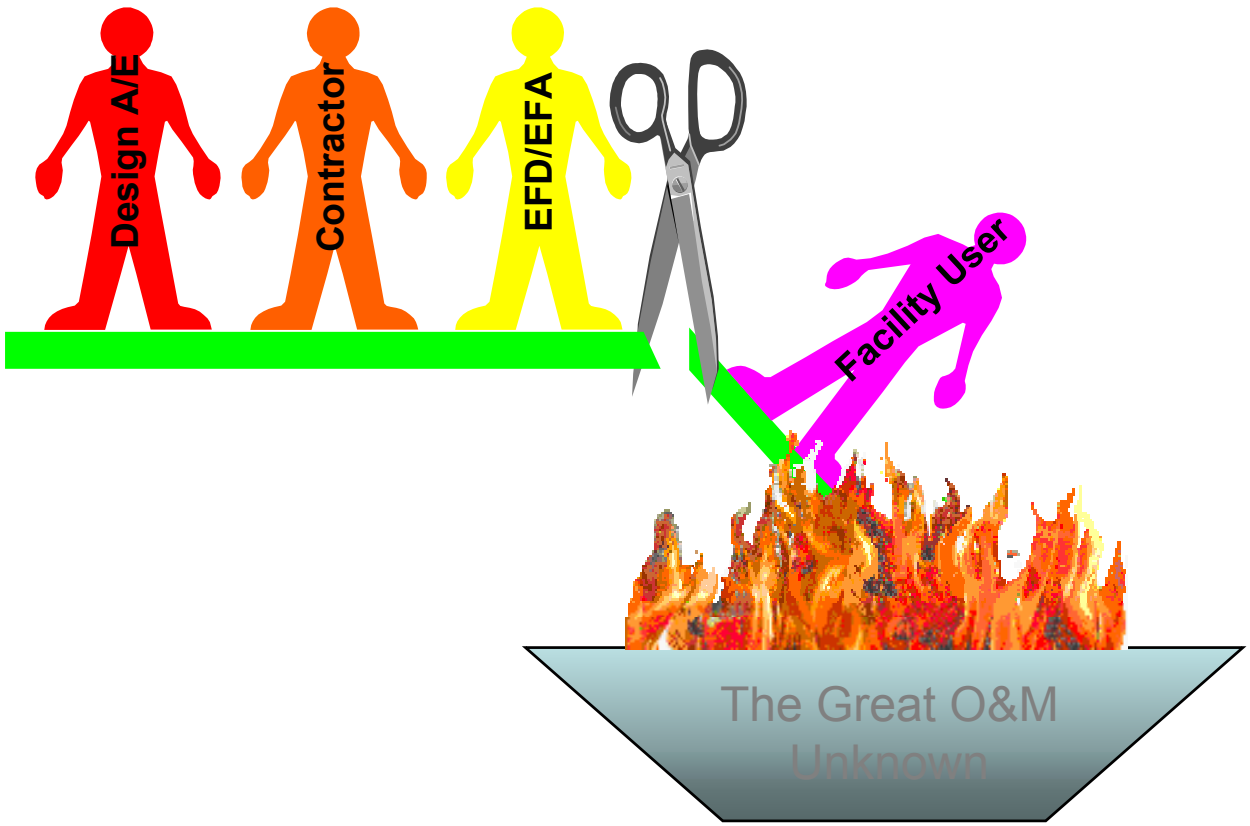
Facility User Perception

Acquisition



What is OMSI?

- ***Information*** that helps the Facility User and PW Staff effectively Operate, Maintain and Repair a Facility.

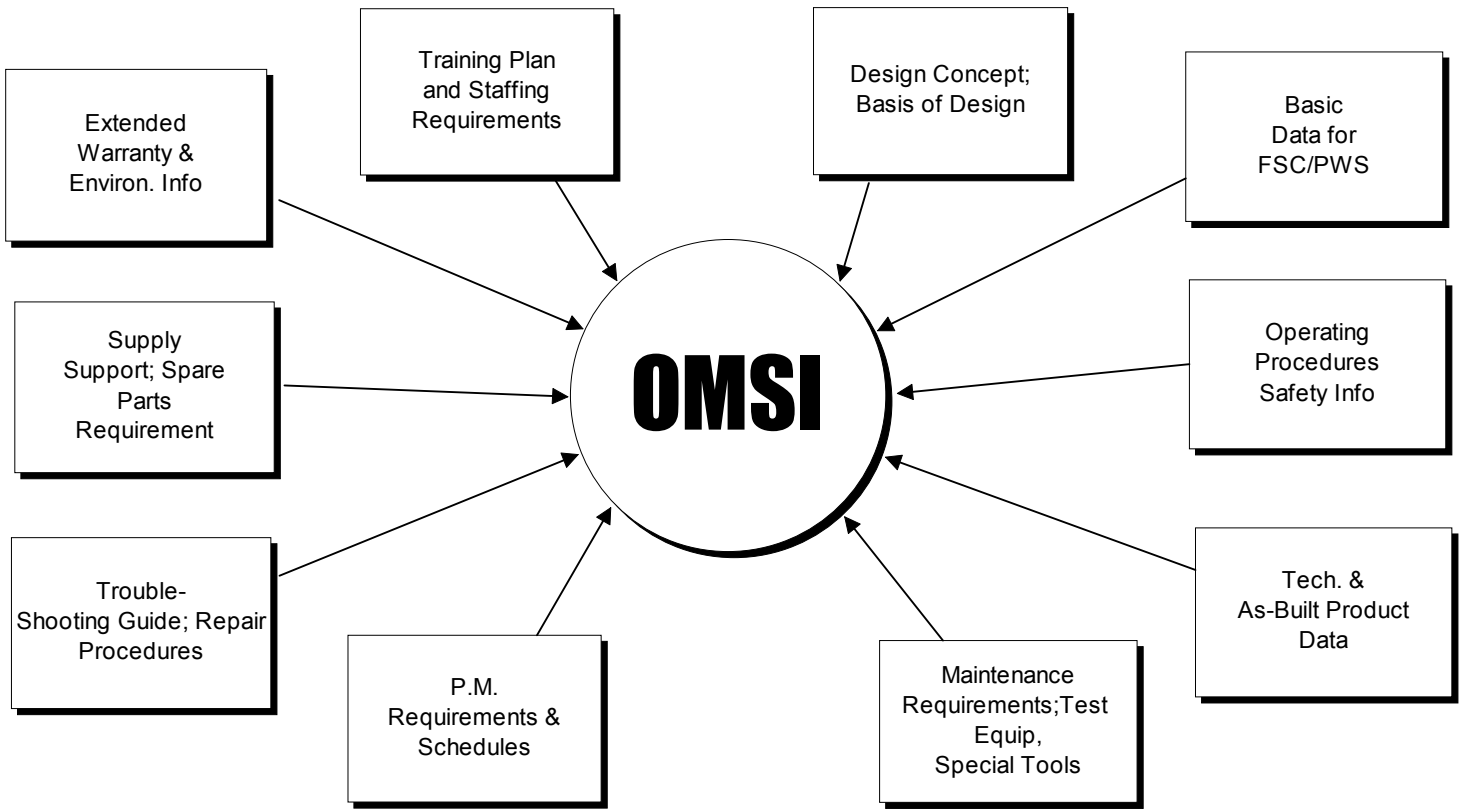
Benefits

- Provides Data for CMMS (Archibus, Maximo, etc.)
- Planning Tool for O&M Workload, Space Planning
- Safer, More Efficient System Startup & Operation
- Orderly Compilation of all As-Built Product Data
- Faster Repairs & Reduced Downtime
- Future Alterations that Fit Original Concept
- Lower O&M Costs

Program

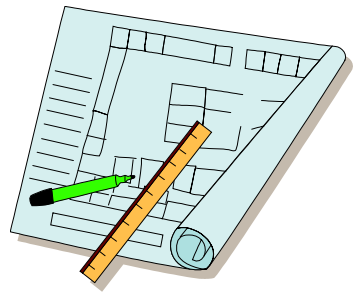
- 84 OMSI delivered in last five years ($773 Mil Constr Costs, $6 Mil OMSI Costs)
- 29 OMSI currently working ($385 Mil Constr Costs, $3 Mil OMSI Costs)
- 72 OMSI Planned ($942 Mil Constr Costs)

Principal OMSI Elements



Principal OMSI Elements

OMSI



Part I
Facility Info

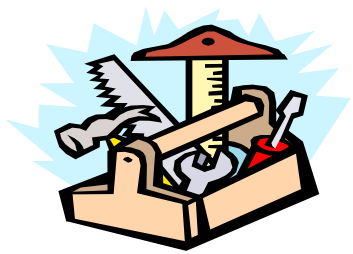
- *Facility and System Description*
- *Design Concept; Basis of Design*
- *Basic Data for FSC/PWS*
- *Site and Floor Plans/Utility Cutoffs*
- *Equipment Inventory*
- *Supply Inventory Requirements*
- *Extended Warranty Information*
- *Training Requirements & Skill Matrix*

Principal OMSI Elements

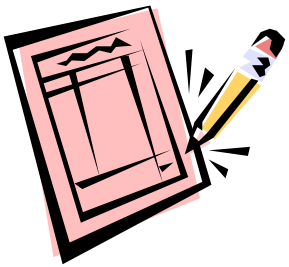
- *Operation*
  - *System Descriptions*
  - *System Flow Diagrams*
  - *Start-Up & Shut Down*
  - *Operating Instructions*
- *Maintenance*
  - *Lubrication Schedules*
  - *PM Plans, Schedules and Procedures*
- *Repair*
  - *Troubleshooting Guides & Diagnostic Techniques*
  - *Repair Procedures*

OMSI

Part II
Primary
Systems
Information



Principal OMSI Elements



OMSI

- *Organized record of Material and Equipment*
- *Arranged by Uniformat classification*
  - *Catalog Cuts*
  - *Key Shop Drawings*
  - *Test Reports*
  - *Manufacturer's Data Sheets*
- *O&M Data (Equipment not included Part II)*
- *Warranties*
- *Referenced by Parts I & II*

Part III
Product Data

Data Packages

Unified Guide Spec Section 01781

Data Package Definition

1 *Architectural items, simple but specific maintenance & replacement (acoustical ceiling, floor tile or carpeting system).*

2 *Less Simple, an item having a motor and some sequence of operation (refrigerated drinking fountain).*

3 *Complex equipment, having a specific troubleshooting sequence, but does not require an operator (HVAC temperature controls).*

4 *Extremely complex, extensive sequence of operation, complex troubleshooting sequence, and requiring an operator (boilers, diesel generator).*

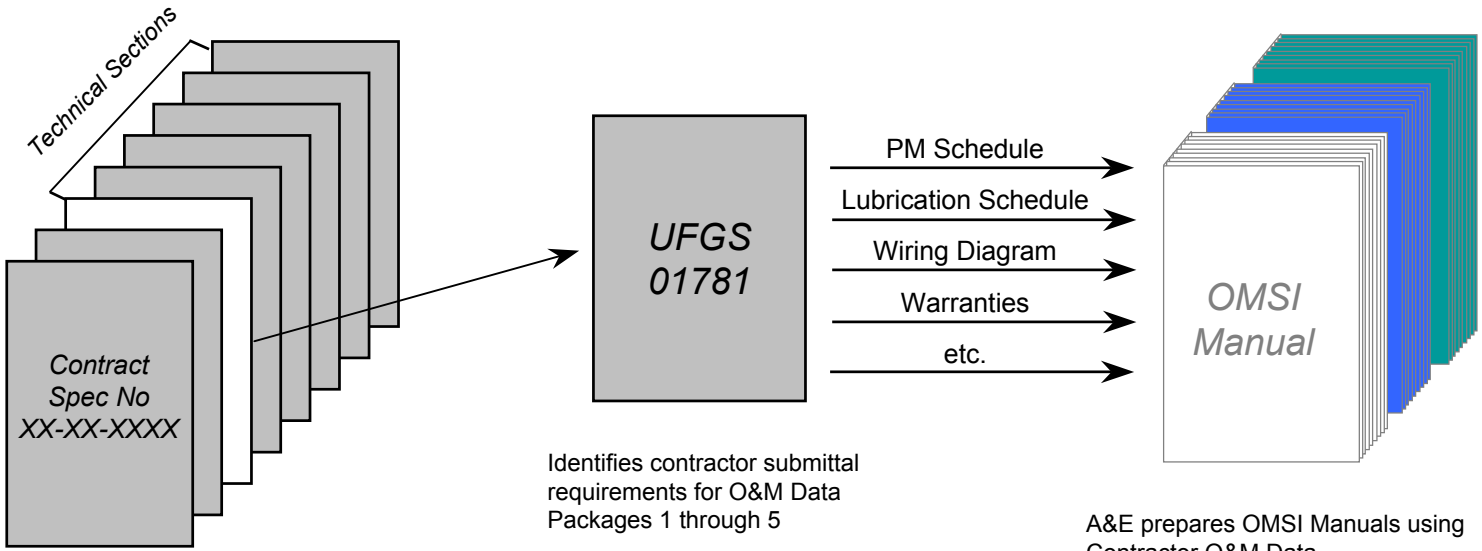
5 *Electrical equipment, components or systems which wiring and control diagrams are needed for operation.*

1	2	3	4	5	*Data Package Content*
●	●	●	●	●	*Safety precautions*
			●	●	*Operator pre-start*
			●	●	*Startup, shutdown, and post-shutdown procedures*
	●	●	●	●	*Normal operations*
		●	●		*Emergency operations*
			●		*Operator service requirements*
	●	●	●	●	*Environmental conditions*
	●	●	●		*Lubrication data*
	●	●	●	●	*Preventive maintenance plan and schedule*
		●	●	●	*Troubleshooting guides and diagnostic techniques*
		●	●	●	*Wiring diagrams and control diagrams*
●	●	●	●	●	*Maintenance and repair procedures*
	●	●	●		*Removal and replacement instructions*
	●	●	●	●	*Spare parts and supply list*
			●		*Corrective maintenance man-hours*
	●	●	●		*Parts identification*
●	●	●	●	●	*Warranty information*
			●		*Personnel training requirements*
		●	●	●	*Testing equipment and special tool information*
●	●	●	●	●	*Contractor information*

NFGS 01781 O&M Data

Operation and Maintenance Support Information

UFGS 01781 Operation & Maintenance Data



Technical sections specify O&M Data Packages for certain equipment and systems per Section 01781

Identifies contractor submittal requirements for O&M Data Packages 1 through 5

A&E prepares OMSI Manuals using Contractor O&M Data

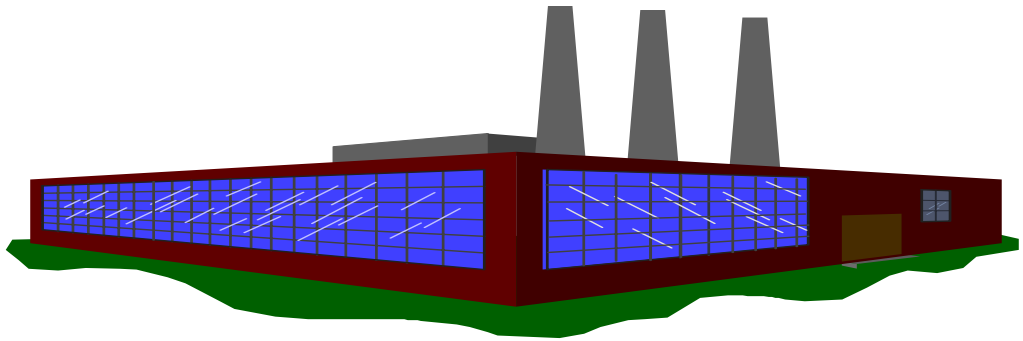
OMSI Manuals will also include other contractor submittals such as manufacture's catalog data, test reports, key shop drawings, etc.

OMSI Budget Costs

Primary plus Applicable Supporting Facilities Costs	OMSI Cost	
	Complex	Non-Complex
Below $5,000,000	1.50 - 2.50%	0.50 - 1.50%
$5,000,000 to $20,000,000	1.25 - 2.00%	0.75 - 1.25%
$20,000,000 to $50,000,000	0.95 - 1.85%	0.50 - 1.10%
Above $50,000,000	0.50 - 1.20%	0.25 - 0.70%

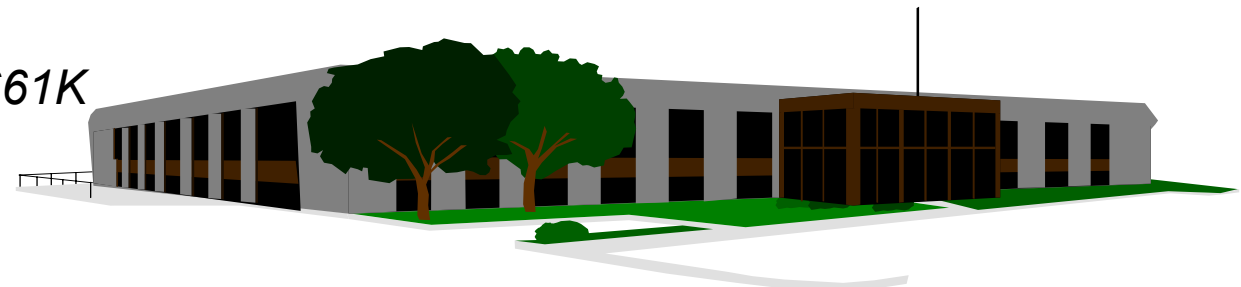
OMSI Costs

ECC=$23.3 MIL
OMSI Cost = $394K
1.69% of ECC



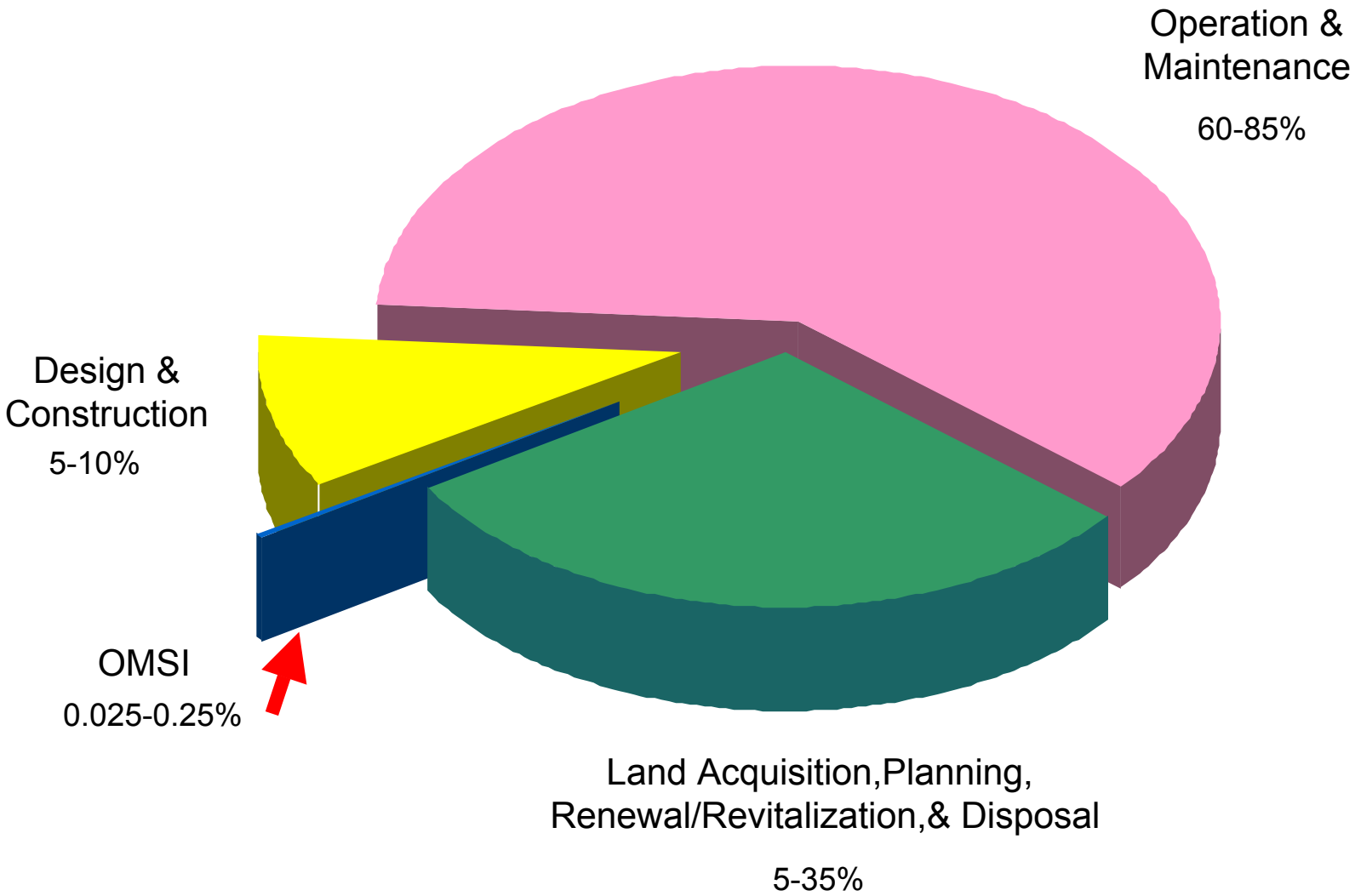
P836, Health Care Clinic, Cherry Point, NC

ECC=$5.5 MIL
OMSI Cost = $61K
1.1% of ECC



P161U, Addition to Training Facility, NAS Oceana

Life Cycle Cost



Anecdotal Evidence of Value

- A new employee of the Combat Swimmer Trainer Facility, NAB Little Creek had recently read the OMSI for the Chemical Feed System, when a chlorine tank head blew off. He followed the life safety instructions in the OMSI, “…evacuate immediately…do not take a single breath” and escaped unharmed…though the keys in his pocket had turned black from the chlorine gas.

Anecdotal Evidence of Value

- Chill water pump disintegrated during military exercise at FCTC Dam Neck. John Schaech, the MCD, was able to quickly identify and replace the pump by using the detailed OMSI information. Mr. Schaech also uses OMSI as the prime reference for contract maintenance of his HVAC systems.

OMSI Benefits

- Provides Data for CMMS (Archibus, Maximo, etc.)
- Planning Tool for O&M Workload, Space Planning
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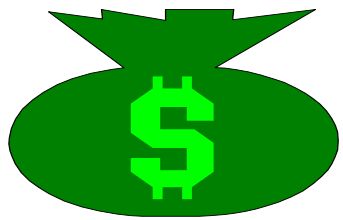
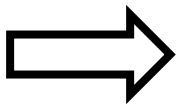


What's Next?

- Increased Electronic Delivery of O&M Information
  - CMMS Applications (i.e., Archibus, Maximo, etc)
  - Develop Standard for Facilities Information (FMOC XML Prototype)
    - Dynamically Assembled Documents
      - Self Generated & Installed
    - Smart Facilities / Systems (IAI)
      - Automated Commissioning
      - Self Diagnostic Systems

Target

Post-construction data
Static data
PDF & paper



Useful data, linked systems
Dynamic data
Provided by A/E
FM and database format
Loaded into ARCHIBUS/FM
Ready for immediate use

“Three generations of OMSI”

Phase 1	Phase 2	Phase 3
Paper Drawings and Paper Manuals	Static Data: PDF documents & CAD on CDs	dynamic integrated electronic

Sample HTML Deliverable

Naval Air Station Sigonella

Operations, Maintenance, and Support Information

Design-Based Planning Submittal

Construction Project: P-620

Submittal Delivery Date: 1 June 2003

Prepared by: Syska

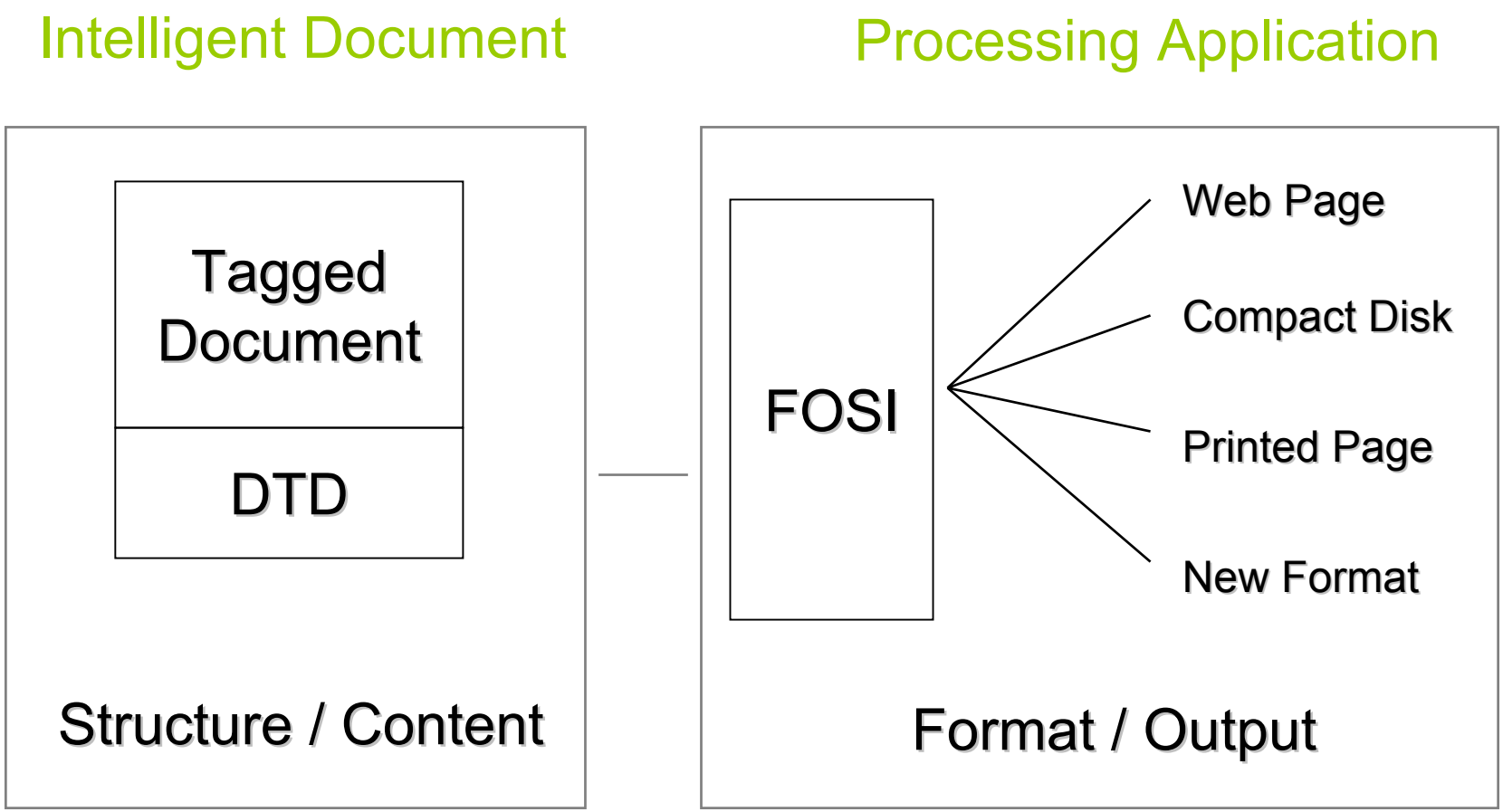
Maintenance Requirement by Trade

Trade					Trade Hours
	Building			Building Hours	
		Building Hours	Building System Hours		
22					254
	1			150	
		BISys 1	100		
		BISys 2	50		

The HTML is rendered after a client-side XSL transformation (using IE6 itself). The XSLT can be customized for the end-user's specific purpose.

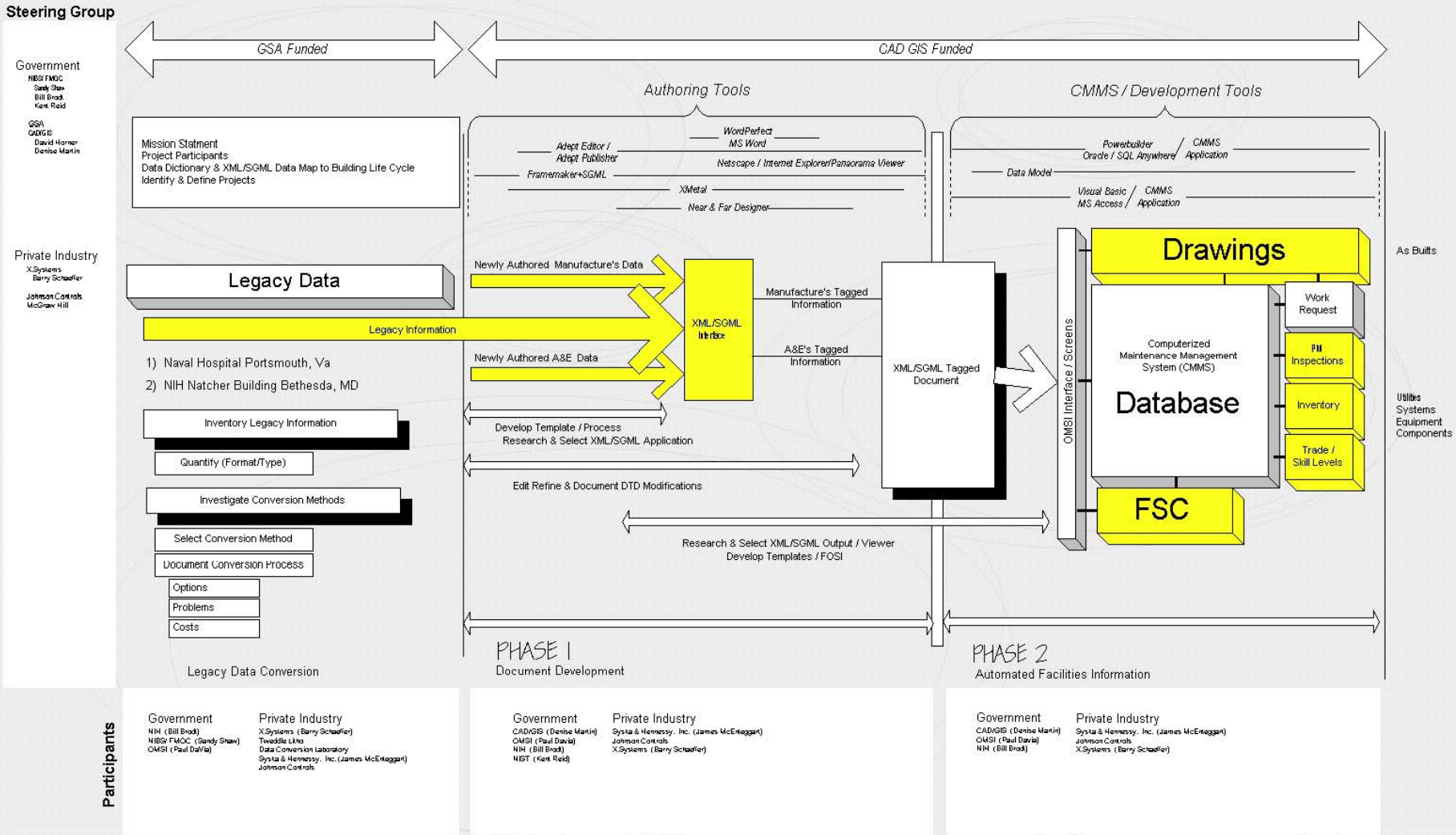
Subtotals and totals can be calculated by the XSLT, rather than trying to forecast the needs of the user when creating the data.

XML


Intelligent Document
Processing Application
Tagged Document
DTD
Structure / Content
FOSI
Web Page
Compact Disk
Printed Page
New Format
Format / Output

XML Advantages

- Data in intelligent, application and system independent.
- Portability across various systems and applications.
- Flexibility beyond traditional publishing.
- Data longevity- data does not need to be converted when applications or systems become obsolete.
- Reusability- documents can be assembled & outputted to various mediums without reentry or reformatting.



OMSI XML/SGML Prototype Plan

Questions & Comments

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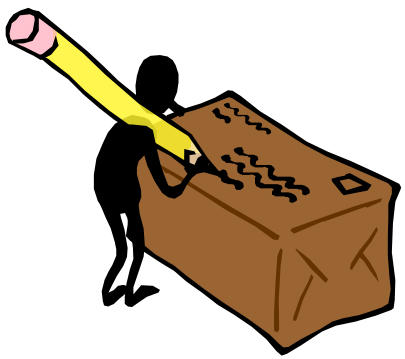
FAX 757-322-4714
William.H.Dunn@navy.mil



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